



Contribution ID: 46

Type: **not specified**

Artificial intelligence for nuclear physics

Thursday, December 12, 2024 11:10 AM (40 minutes)

The last decade has put artificial intelligence in the spotlight both in science and in our daily life. This boom takes its origin from the wealth of recently designed machine learning algorithms such as generative adversarial networks (2014) or transformers (2017). An other important key to its success is its large accessibility through open source libraries such as TensorFlow and PyTorch steamed by the increasing power and availability of GPUs. A natural question in such a context is: Can we import techniques or ideas from the field of artificial intelligence to nuclear physics or the other way around ?

In this talk I will survey the main applications of machine learning to nuclear experiments and theory. I will try to emphasize which of these techniques are mature for applications, proof of principle, or ideas for future explorations.

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Session Classification: Artificial Intelligence